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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,805	10/29/2003	Rong-Chang Liang	07783.0082.NPUS00	1310

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EXAMINER
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HASAN, MOHAMMED A

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/696,805

Applicant(s)

LIANG ET AL.

Examiner

Mohammed Hasan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35 - 46 is/are allowed.
- 6) ☒ Claim(s) 1 - 10, 13 - 29, 34, 47-49 is/are rejected.
- 7) ☒ Claim(s) 11, 12, 30 - 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

**Note: The finality of the rejection of the last office action is withdrawn, because the last office action did not acknowledge claims 47-49.**

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1- 10, 13 - 29, 34, and 47 – 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Liang et al (6,831,770 B2).

Regarding claim 1, Liang et al discloses (refer to figure 8) an electrophoretic display which comprises more than one layer (two conductive layers 86 and 87 ) of display cells (80) filled with electrophoretic fluids (column 10, lines 55 – 67, column 11, lines 1- 8).

Regarding claim 2, Liang et al discloses (refer to figure 8) wherein filled display cells are sealed with a polymeric sealing layer (81) (column 10, lines 57).

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Regarding claim 3, Liang et al discloses (refer to figure 8) wherein the display cells are separated by partition walls (83) (column 10, line 62).

Regarding claim 4, Liang et al discloses (refer to figure 8) wherein polymeric sealing layer encloses the electrophoretic fluid (85) within each cell and sealing adheres to the surface of the partition walls of the cells (column 10, lines 55 - 67).

Regarding claim 5, Liang et al discloses, wherein cells are partially filled with electrophoretic fluids (as shown in figure 7g).

Regarding claim 6, Liang et al discloses (refer to figure 8) wherein polymeric sealing layer (81) is contact with the top surface of the electrophoretic fluid (column 10, line 57, column 2, line 34).

Regarding claim 7, Liang et al discloses (refer to figure 8) wherein the display cells are the partition type display cells (column 1, lines 30 - 35).

Regarding claim 8, Liang et al discloses, wherein display cells are the microgroove or microchannel type display cells (column 9, lines 14 - 16).

Regarding claim 9, Liang et al discloses, wherein the display cells are microcapsules having a cell size ranging from about 10 to about 200 $\mu$ m (column 7, lines 36 - 45).

Regarding claim 10, Liang et al discloses, wherein the display cells are microcapsules having a cell size ranging from about 30 to about 120 $\mu$ m (column 7, lines 36 - 45).

Regarding claim 13, Liang et al discloses, wherein each layer of display cells has a thickness in the range of about 10 to about 100 $\mu$ m (column 10, lines 56 - 59).

Regarding claim 14, Liang et al discloses, wherein each layer of display cells has a thickness in the range of about 12 to 30 $\mu$ m (column 10, lines 56 - 59).

Regarding claim 15, Liang et al discloses, wherein the display cells are filled with electrophoretic fluids of different colors, optical densities, switching speeds or magnetic properties (column 9, lines 28 - 37).

Regarding claim 16, Liang et al discloses, wherein one of more than one of display cells having shape, dimension or ratio of opening to total area different from those of display cells of another layer (column 2, lines 26 - 32).

Regarding claim 17, Liang et al discloses wherein the cells are separated by inactive partition areas and the electrophoretic fluid is enclosed within each cell by a polymeric sealing layer (column 4, lines 26 - 44)

Regarding claim 18, Liang et al discloses (refer to figure 8) wherein inactive partition areas of a layer are positioned with registration to area of display cells filled with electrophoretic fluids another layer in a staggered fashion.

Regarding claim 19, Liang et al discloses (refer to figure 8) which comprises one top layer (86) of display cells and one bottom layer (87) of display cells (i.e., display cell 80) (column 11, lines 3 - 8).

Regarding claim 20, Liang et al discloses, the display cells are filled with an electrophoretic fluid comprising white pigment particles (column 9, lines 20 - 25).

Regarding claim 21, Liang et al discloses, a display cells which are filled with an electrophoretic fluid white pigment particles or pigment – containing microparticles dispersed in a black solvent or solvent mixture (column 9, lines 20 - 28).

Regarding claim 22, Liang et al discloses, a multicolor (i.e., D max state) electrophoretic display wherein the bottom layer on the non-viewing side comprises black cells are filled with an electrophoretic fluid comprising white pigment particles or pigment – containing microparticles dispersed a black solvent or solvent mixture (column 9, lines 20 - 28 ).

Regarding claim 23, Liang et al discloses, a full color or multi-color electrophoretic display wherein the bottom layer on the non-viewing side comprises red, green, blue and black cells which are filled with electrophoretic fluids comprising white pigment particles or pigment- containing microparticles dispersed in red , green, blue and black solvent or solvent mixture, respectively and the top layers comprises red, green and blue cells which are filled with electrophoretic fluids comprising white pigment particles or pigment –containing microparticles dispersed in red, green and blue solvent or solvent mixture (column 9, lines 20- 37).

Regarding claim 24, Liang et al discloses, wherein the colored cells and inactive partition areas of the two layers are arranged in a staggered fashion that the red, green, blue and black cells of the bottom layer respectively (column 8, lines 1 - 18).

Regarding claim 25, Liang et al discloses (refer to figure 8) an electromagnetophoretic display which comprises one top layer (86) of display cells and one bottom layer (87) comprising display cells which are filled with an electromagnetophoretic fluid (85) comprising a mixture of black magnetic particles and white non-magnetic particles dispersed in a colorless clear solvent or solvent (column 10, lines 55 – 67, column 11, lines 1 - 6).

Regarding claim 26, Liang et al discloses, wherein the top layer (74) comprises red, green and blue cells which are filled with electrophoretic fluids comprising white particles dispersed in red, green and blue solvents respectively (column 10, lines 14 – 49).

Regarding claim 27, Liang et al discloses, wherein the top layer comprises display cells which are filled with an electrophoretic fluid a mixture of white and black particles dispersed in a colorless clear solvent or solvent mixture (column 8, lines 1 - 18).

Regarding claim 28, Liang et al discloses (refer to figures 6 and 8) a process for the manufacture of an electrophoretic display of more than one layer (60 and 67) of display cells, which process comprises (a) preparing separately two layers of display cells, each having a conductor film side (66) and a sealing side (67); and (b) laminating one of the layers over other optionally with an adhesive layer (column 11, lines 12 – 50).

Regarding claim 29, Liang et al discloses (refer to figure 6) wherein step (a) is carried out by forming display cells (60) over a conductor film (67), filling

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cells with an electrophoretic fluid and sealing are filled cells with a polymeric sealing layer (81) (column 9, lines 17 – 57, column 11, line 5).

Regarding claim 34, Liang et al discloses (refer to figure 6) wherein step (b) is carried out by laminating one layer of the display cells over layer with the sealing sides of the two layers facing each other (column 11, lines 17 – 57, column 12, lines 1 - 22).

Regarding claim 47, Liang et al discloses, wherein polymeric sealing layer is formed from a sealing composition having a specific gravity lower than electrophoretic fluid (column 3, lines 8 – 11).

Regarding claim 48, Liang et al discloses, wherein sealing composition comprises a thermoplastic elastomer, polyurethane, polyvalent acrylate or methacrylate, cyanoacrylate, polyvalent vinyl, polyvalent epoxide, polyvalent isocyanate, polyvalent allyl or an oligomer or polymer containing a crosslinkable functional group (column 9, lines 40 – 50).

Regarding claim 49, Liang et al discloses, wherein polymeric sealing layer is formed in situ (column 9, line 17).

***Allowable Subject Matter***

2. Claims 35 – 46 are allowed.
3. The following is an examiner's statement of reasons for allowance: The prior art taken either singularly or in a combination fails to anticipate or fairly suggest the limitations of the independent claims, in such a manner that a



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rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claim 35, for example which include a process for the preparation of an electrophoretic display of more than one layer of display cells and process comprises (a) forming a first layer and first layer having a conductor film side and sealing side (b) forming a second layer of display cells on a transfer release layer (c) laminating a second layer over the first layer and removing the transfer release layer (d) optionally forming separately additional layers of display cells on transfer release layers and each layer having a transfer release layer side and a sealing side (e) laminating each of additionally layers over a stack of layers already formed and removing the transfer release layer (f) laminating a second conductor film over a stack .

4. Claims 11 – 12, and 30 – 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, display cells has a thickness in the range of about 10 to about 100 $\mu$ m,.

5. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show where the cells are prepared by microembossing, cells are prepared by photolithography or prepunched holes, and two layers are prepared by different methods, display cells are sandwiched between two conductor films and then shortest distance between the two conductor films is in the range of about 15 to about 200 $\mu$ m , the shortest distance between the two conductor films is in the range of about 20 to about 50 $\mu$ m , and

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wherein each layer of display cells has a thickness in the range of about 12 to 30 $\mu$ m.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art

Liang et al (6,859,302 B2) discloses an electrophoretic display and novel process for its manufacture.

Amundson (6,842,279 B2) discloses an illumination system for nonemissive electronic display.

Lin et al (6,577,433 B1) discloses an electrophoretic displays, display fluids for use therein and methods of display images.

### ***Response to Arguments***

7. Applicant's arguments filed 7/11/2005 have been fully considered but they are not persuasive.

In response to applicant argument, Liang et al discloses (refer to figure 8) an electrophoretic display which comprises more than one layer (two conductive layers 86 and 87 ) of display cells (80) filled with electrophoretic fluids (column 10, lines 55 – 67, column 11, lines 1- 8). Liang et al also shown in figure 6, precursors (60) in figure 6 (i.e., two layers in an electrophoretic display)(column 11, lines 15 – 20).

***Conclusion***

**8. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

**9.** Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272- 2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MH  
July 26, 2005

A handwritten signature in cursive script, reading "Georgia Epps".

Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800